

***Clarias insolitus*, a new species of clariid catfish (Teleostei: Siluriformes) from southern Borneo**

HEOK HEE NG

Fish Division, Museum of Zoology, University of Michigan, 1109 Geddes Avenue, Ann Arbor, Michigan 48109-1079, USA (heokheen@umich.edu)

Abstract

A new species of catfish in the genus *Clarias* is described from the Barito River drainage in southern Borneo. *Clarias insolitus* can be clearly distinguished from all other Southeast Asian *Clarias* species in having a long and thin anterior fontanel and hypertrophied sensory canal pores on the head and body that are easily visible to the naked eye. Additional diagnostic characters not unique to this species are a uniform violet-gray color without any white spots on body and prominent serrations on the anterior edge of the pectoral spine.

Key words: Clariidae, Kalimantan Tengah, Barito River

Introduction

The genus *Clarias* Scopoli, 1777 is a group of air-breathing catfishes found in inland waters throughout much of the Old World. They are easily identified by an anguilliform body, long-based dorsal and anal-fins, eye with free orbital margin and located dorsolaterally, large and well-developed neurocranium and the presence of an accessory breathing organ comprised of modified gill arches. Although the bulk of *Clarias* diversity is found in Africa (Teugels, 1986), 18 nominal species, 12 of which are currently considered valid (Ng, 1999; 2001), are known from Southeast Asia.

As recent studies have shown, the diversity of Southeast Asian *Clarias* is higher than previously thought and undescribed taxa are still being described. During an examination of material collected during an ichthyological survey of the upper Barito River drainage in southern Borneo, a highly distinctive species of *Clarias* with characters not previously seen in other Asian congeners was discovered. This material is described as *Clarias insolitus*, new species.

Material and methods

Measurements were made with dial calipers and recorded to tenths of a millimeter. Counts and measurements were made on the left side of specimens whenever possible. Subunits of the head are presented as proportions of head length (HL). Head length and measurements of body parts are given as proportions of standard length (SL). Measurements and counts follow those of Teugels (1986); vertebral counts follow those of Roberts (1994). Institutional abbreviations follow Leviton et al. (1985) except for the Zoological Reference Collection of the Raffles Museum of Biodiversity Research, National University of Singapore (ZRC).

Clarias insolitus sp. nov. (Figs. 1 & 2a)

Type material. Holotype: MZB 6112, 122.5 mm SL; Borneo: Kalimantan Tengah, Barito River drainage; small stream flowing into Sungai Rekut (tributary of Sungai Busang) about 1.5 km upstream from the Project Barito Ulu base camp on Sungai Busang; D. Siebert, O. Crimmen & A. Tjakrawidjaja, 5 February 1991.

Paratypes: BMNH 2001.1.15.98–103, 7 ex., 53.5–139.7 mm SL; data as for holotype.



FIGURE 1. *Clarias insolitus*, holotype, MZB 6112, 122.5 mm SL; Borneo: Barito River drainage.

Diagnosis. *Clarias insolitus* differs from other Southeast Asian *Clarias* hypertrophied sensory canal pores on the head and body easily visible to the naked eye (vs. sensory canal pores indistinct and not visible without magnification) and (except for *C. batrachus*) in having a long and thin (“knife-shaped” of Teugels, 1986) anterior fontanel [all other Asian species have a short and squat (“sole-shaped” of Teugels, 1986) anterior fontanel]. *Clarias insolitus* can be further distinguished from all other Southeast Asian *Clarias* (except for *C. intermedius*, *C. meladerma*, *C. olivaceus*, and *C. planiceps*) in having prominent serrations on the anterior edge of the pectoral spine (vs. anterior edge smooth or with low, indistinct asperities forming a rugose edge) and (except for *C. olivaceus* and *C. planiceps*) in lacking white spots on the body. *Clarias insolitus* further differs from *C. intermedius* and *C. mela-*

derma in having a longer distance between the tip of the occipital process and the base of the first dorsal-fin ray (10.3–12.4% SL vs. 3.1–5.6) and a more slender body (9.9–11.5% SL vs. 13.7–16.6), from *C. olivaceus* in having a more slender body (9.9–11.5% SL vs. 12.5–15.2) and narrower head (14.0–15.6% SL vs. 16.0–18.7 and from *C. planiceps* in having a longer snout (32.5–37.7% HL vs. 20.6–28.7) and smaller interorbital distance (39.4–43.6% HL vs. 46.4–49.9).

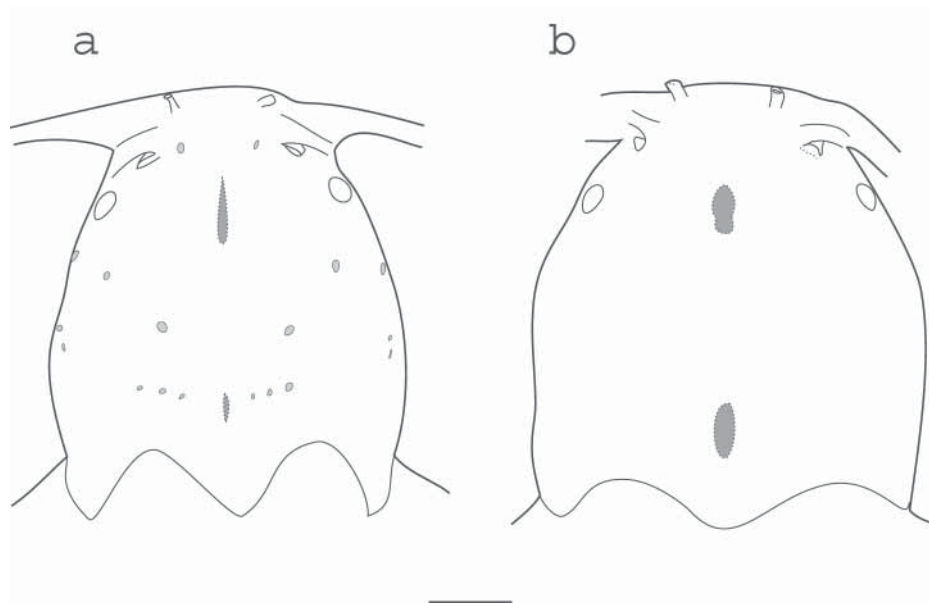


FIGURE 2. Schematic illustration of dorsal views of heads of: a. *Clarias insolitus*, MZB 10704, holotype, 122.5 mm SL; b. other Southeast Asian *Clarias* except *C. batrachus* (*C. leiocanthus*, ZRC 37758, 112.8 mm SL illustrated), showing differences in shape of anterior fontanel. Note hypertrophied laterosensory canal openings on the head of *C. insolitus* (in lighter gray). Scale bar represents 5 mm.

Description. Head depressed; dorsal profile slightly convex and ventral profile almost straight. Bony elements of dorsal surface of head covered with thick skin; bones not readily visible, but sutures sometimes evident. Anterior fontanel long and thin (“knife-shaped” of Teugels, 1986); anterior tip reaching just beyond line through anterior orbital margins. Occipital process acutely rounded. Eye ovoid, horizontal axis longest, subcutaneous; located dorsolaterally on head. Gill openings narrow, extending from dorsal-most point of pectoral-fin base to isthmus. Gill membranes free from isthmus but united to each other with 7 (n=6) or 8 (n=2) branchiostegal rays. First branchial arch with 2+10 (n=2) or 2+12 (n=6) gill rakers.

TABLE 1. Morphometric data for *Clarias insolitus* (n=8). Additional morphometric data of *C. olivaceus* and *C. planiceps* (the two most similar species) can be found in Tan & Ng (2000) and Ng (1999) respectively.

MORPHOMETRICS	Range	Mean±SD
%SL		
Predorsal length	32.7–34.8	33.6±0.71
Preanal length	46.4–49.6	47.8±1.24
Prepelvic length	40.2–42.9	41.2±0.96
Prepectoral length	18.3–21.1	19.6±0.92
Length of dorsal-fin base	65.7–70.8	67.4±1.65
Length of anal-fin base	49.4–54.0	51.7±1.63
Pelvic-fin length	6.7–8.4	7.7±0.47
Pectoral-fin length	11.4–14.7	12.6±1.20
Pectoral-spine length	6.3–8.4	7.4±0.81
Caudal-fin length	14.0–17.6	16.1±1.30
Distance between occipital process and dorsal fin	10.3–12.4	11.0±0.67
Body depth at anus	9.9–11.5	10.7±0.57
Caudal peduncle depth	6.3–7.8	6.8±0.54
Head length	22.3–23.9	23.2±0.60
Head width	14.0–15.6	14.8±0.53
Head depth	9.9–11.3	10.5±0.46
%HL		
Snout length	32.5–37.7	34.5±1.74
Interorbital distance	39.4–43.6	42.1±1.36
Eye diameter	5.7–7.4	6.5±0.63
Nasal barbel length	73.1–119.7	94.3±17.04
Maxillary barbel length	120.6–174.5	135.9±17.48
Inner mandibular barbel length	63.5–82.8	72.9±5.66
Outer mandibular barbel length	93.1–133.7	109.0±13.48
Front fontanel length	12.3–20.1	16.8±3.02
Front fontanel width	4.2–6.5	5.0±0.75
Occipital fontanel length	9.6–15.7	12.0±2.36
Occipital fontanel width	3.9–7.9	5.0±1.35
Occipital process length	24.4–29.5	27.2±1.78
Occipital process width	11.4–22.7	18.0±3.53

Mouth subterminal, with fleshy, plicate lips. Oral teeth small and in irregular rows on all tooth-bearing surfaces. Premaxillary tooth band rectangular, with median notch on posterior edge. Dentary tooth band much narrower than premaxillary tooth band at symphysis, tapering laterally. Vomerine tooth band unpaired, continuous across midline, crescentic and smoothly arched along anterior margin, posterior margin with a median process. Premaxillary and dentary teeth viliform; vomerine teeth subgranular.

Barbels in four pairs; long and slender with thick fleshy bases. Maxillary barbel extending nearly to base of first dorsal-fin ray. Nasal barbel, extending nearly to tip of occipital process. Inner mandibular-barbel origin close to midline; barbel thicker and longer than nasal barbel and extending to base of pectoral spine. Outer mandibular barbel originates posterolateral of inner mandibular barbel, extending to tip of pectoral fin. Body cylindrical, becoming compressed towards caudal peduncle. Dorsal profile rising very gently from tip of snout to origin of dorsal fin and thereafter almost horizontal to end of caudal peduncle. Ventral profile slightly convex to middle of head and thereafter almost horizontal to end of caudal peduncle.

Skin smooth. Lateral line complete and midlateral in position. Vertebrae $19+42=61$ ($n=1$), $18+44=62$ ($n=1$), $20+42=62$ ($n=3$), $21+41=62$ ($n=1$), or $20+43=63$ ($n=2$).

Dorsal fin with long base, spanning posterior three-quarters of body; with 67 ($n=2$), 68 ($n=1$), 71 ($n=2$), 72 ($n=1$), 75 ($n=1$) or 76 ($n=1$) rays covered by thick layer of skin and without spine. Dorsal-fin margin straight, parallel to dorsal edge of body.

Pectoral fin with small spine, sharply pointed at tip, and 8 ($n=8$) rays. Proximal three-quarters of anterior spine margin with large serrations; distal quarter of anterior spine margin and posterior spine margin smooth. Pectoral-fin margin straight anteriorly, convex posteriorly.

Pelvic-fin origin at anterior third of body, with i,5 ($n=8$) rays and convex margin; tip of adpressed fin reaching base of first few anal-fin rays. Anus and urogenital openings located at vertical through middle of adpressed pelvic fin.

Anal fin with long base and 53 ($n=1$), 55 ($n=2$), 56 ($n=2$), 58 ($n=2$) or 63 ($n=1$) rays covered by thick layer of skin; margin straight and parallel to ventral edge of body. Caudal peduncle very short. Caudal fin rounded, with i,6,6,i ($n=8$) principal rays.

Morphometric data as in Table 1.

Color. Dorsal and lateral surfaces of head and body violet-gray, fading to pale gray on ventral surfaces. Dorsal, anal and caudal fins violet-gray with very thin hyaline distal margin. Pectoral-fin rays violet-gray, with hyaline interradyal membranes. Pelvic fins hyaline. Barbels and pectoral spines violet-gray dorsally and light grey ventrally.

Distribution. Known from the upper Barito River drainage in southern Borneo (Fig. 3).

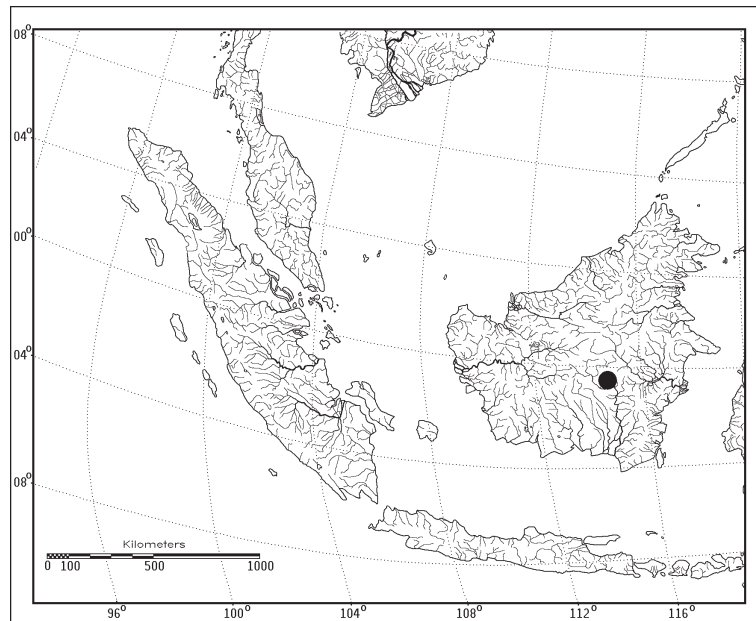


FIGURE 3. Map showing distribution of *C. insolitus* (●). Base map courtesy of W. J. Rainboth.

Etymology. From the Latin *insolitus*, meaning strange; in reference to the combination of hypertrophied sensory canal pores and a knife-shaped anterior fontanel, which is not seen in other Southeast Asian *Clarias*. Used as a noun in apposition.

Discussion

Recent taxonomic studies on Southeast Asian *Clarias* have divided them into three species groups based on the distance between the tip of the occipital process and the base of the first dorsal ray and the relative length of the body as expressed by the number of dorsal- and anal-fin rays and vertebrae (Ng, 1999). Until a detailed phylogenetic study can be undertaken to ascertain if the species groups are indeed natural, this approach is not utilized here, largely because the characters that diagnose *Clarias insolitus* are highly distinctive and not seen in other Southeast Asian taxa.

The color pattern of *C. insolitus* is also distinct in lacking white spots on the body. A color pattern consisting either of a uniform color or one with small, indistinct white spots is shared with only two other species of Southeast Asian *Clarias*, viz. *C. batu* and *C. planiceps*. However, *C. insolitus* can be distinguished from *C. planiceps* by the characters mentioned in the diagnosis and from *C. batu* by the number of vertebrae (61–63 vs. 67–71).

Among other Southeast Asian *Clarias*, a long and thin anterior fontanel is only found in *C. batrachus* (Teugels et al., 1999), which can be easily distinguished from *C. insolitus* in having a smaller distance between the tip of the supraoccipital and the base of the first dorsal-fin ray (5.8–8.2% SL vs. 10.3–12.4), as well as the characters already mentioned in the diagnosis, i.e. indistinct (vs. hypertrophied) sensory canal pores on the head and body, presence (vs. absence) of white spots on the body, and anterior edge of the pectoral spine smooth or with low asperities (vs. with prominent serrations).

Comparative material

Clarias batrachus: UMMZ 155803, 5 ex., 130.7–151.8 mm SL; Java: vicinity of Singaparna. UMMZ 155807, 4 ex., 168.6–212.8 mm SL; Java: vicinity of Bandung. UMMZ 217576, 10 ex., 98.2–167.9 mm SL; Thailand: Ubon Ratchathani province, Huay Thomloe at Ban Bung Rhee-Lek, 7 km E of Khemerat, 2.5 km from Mekong River.

Clarias intermedius: ZRC 46110–46113, 4 paratypes, 174.0–192.5 mm SL; Borneo: Kalimantan Tengah, Kereng Bengkirai.

Clarias meladerma: ZRC 38979, 6 ex., 172.8–185.5 mm SL; Sumatra: Jambi, Pasar Angso Duo.

Clarias olivaceus: ANSP 27280, holotype, 241.8 mm SL; ANSP 27281, 3 paratypes, 157.5–209.5 mm SL; Sumatra: Padang. CAS 108051, 1 ex., 216.0 mm SL; USNM 193033, 9 ex., 113.0–149.8 mm SL; Sumatra: Lake Toba at Prapet. ZRC 41697, 8 ex., 116.2–231.7 mm SL; Sumatra: Jambi province, Kerinci, Sungaipenuh market.

Clarias planiceps: FMNH 68103, 22 paratypes, 70.8–210.8 mm SL; Borneo: Sarawak, Third Division, tributary of Baleh River, between Sungai Entunau and Sungai Putai. USNM 323727, 1 paratype, 297.3 mm SL; Borneo: Sarawak, Batang Balui, tributary stream, Batang Belahui.

Refer to Ng (1999) for list of additional material.

Acknowledgments

I am grateful to David Catania (CAS), Maurice Kottelat (CMK), Ike Rachmatika and Renny Hadiaty (MZB), Martien van Oijen (RMNH), Douglas Nelson (UMMZ), and Kelvin Lim (ZRC) for access to material under their care, and to Walter Rainboth for permission to use the map of Southeast Asia. This work was funded by support from the Rackham School of Graduate Studies of the University of Michigan and All Catfish Species Initiative (NSF DEB 0315963).

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